

Naval Doctrine Publication 4

Naval Logistics



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WASHINGTON, DC 20350-2000
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WASHINGTON, DC 20380-0001

20 February 2001

FOREWORD

Naval logistics is the *sine qua non* of our combat power and is the bridge that connects our nation's industrial base to forward-deployed naval forces.

Whether appearing in the form of effective peacetime forward presence or decisive power projection, readiness and the ability to sustain such operations are the hallmarks of our Navy-Marine Corps team—and both readiness and sustainability hinge upon logistic support. Certainly, effective logistic support will not always guarantee success; lack of such support, however, inevitably will bring failure.

Naval Doctrine Publication (NDP) 4, Naval Logistics, is the fourth in the series of capstone publications that articulate naval doctrine. Every naval professional must understand its contents. NDP 4 discusses the basis of operational naval logistics and establishes the foundation for development of follow-on tactics, techniques and procedures, which are contained in the series of logistics Navy Warfare and Tactics, Techniques, and Procedures Publications (NWPs and NTPs) and Marine Corps Doctrinal and Warfighting Publications (MCDPs and MCWPs).

A handwritten signature in black ink, appearing to read "V. Clark", is positioned above the printed name.

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INTRODUCTION

The U.S. military's ability to project power is a reflection of our ability to equip, train, and deploy our forces. Without adequate military hardware and other logistics support, well-trained Sailors and Marines cannot accomplish their mission. Whether it is providing supplies, services, and infrastructure or conducting thorough planning with effective organizations, logisticians are the professionals who provide this service. Naval Doctrine Publication (NDP) 4, Naval Logistics, is the foundation on how the naval service provides this support.

In an era of decreased force levels and infrastructure, our naval forces remain the most independent and flexible instruments of national policy. With their ability to operate from the sea, the naval services provide both peacetime as well as contingency options to our military leaders. Robust and responsive logistics support is critical to operate from this environment. Naval Logistics explains how support for these operations is planned and accomplished and discusses the systems that move forces to the fight and sustain them there. This capstone publication focuses on the fundamental principles guiding our logistics operations. Other publications in the Navy, Marine Corps, and joint libraries provide added detail and perspective on specific areas of naval logistics including supply, maintenance, transportation, engineering, and health services. References to these publications are listed at the end of this publication.

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CHAPTER ONE

The Nature and Fundamentals of Naval Logistics

“Logistics provides the physical means for organized forces to exercise power. In military terms, it is the creation and sustained support of combat forces and weapons. Its objective is maximum sustained combat effectiveness.”

—Rear Admiral Henry Eccles, USN (Ret.)

Introduction

Naval forces are among the most responsive, flexible, powerful, and independent tools of national policy. U.S. Navy forces contribute decisively to global leadership. Through power projection and presence, our naval forces support our national interests abroad. A strong naval team capable of deterrence and contingency operations at sea, from the sea, and in operations other than war is essential to this effort. Key to the strength of this team is logistics support, provided by trained personnel within an intricate network of *materiel, facilities, transportation, technical support, and information*. Naval logistics builds and sustains our forces, in readiness and in action.

Effective naval logistics enables us to carry out the Navy and Marine Corps’ assigned roles. It supports our ability to conduct continuous forward presence, peacetime engagement, deterrence operations, and timely crisis response from the challenging maritime and littoral environment. Through our logistics systems, Navy and Marine Corps striking power is always available, and always sustainable through an established support

system. An extensive defense distribution system comprised of military bases at home and abroad, combat logistics force ships, and expeditionary support forces including airlift and sealift, as well as resources from sister Services, host nations, and commercial contractors provide the means for this projection power.

Sustained forward deployment of naval forces also allows our nation to pursue regional coalition-building and collective security efforts. Thus, naval logistics forces must be able to provide and receive support within a variety of organizational structures. Consequently, engagement in joint and multinational logistics efforts are increasingly critical to support mutual readiness and capability, enhancing the efficiency and effectiveness of our combat operations.

Naval logistics operations are conducted much the same in peace as they are in war. They support and sustain the warfighter whenever and wherever, differing mainly in the magnitude of the requirements placed on the logistics systems and the level and types of threat to which these systems are exposed. A viable, accessible, and ready reserve of trained personnel and effective equipment, and reliable sources of war materiel, must back active logistics forces. These resources must also include agreements and understandings that permit the sharing of logistics resources among other services, other nations, and the private sector of all engaged nations.

To participate in and benefit from effective naval logistics, supported and supporting commanders need to understand the mission, scope, and different levels of logistics support. In addition, one needs to understand the functional areas, the process elements, the guiding principles, and the conceptual background driving the current evolution of naval logistics.

Mission of Naval Logistics

The mission of naval logistics is to provide and sustain the operational readiness of our naval forces, and to support the operational readiness of other forces as directed. In peace, operational readiness enables our naval forces to accomplish a wide variety of missions—independently or in conjunction with other services, agencies, allies, or coalition partners. In war, this same operational readiness is the root of warfighting effectiveness; it makes victory possible.

Effective logistics is a force multiplier, allowing the commander to maintain greater masses of power in harm's way for longer periods. This is accomplished through optimizing readiness at best value while providing responsive maintenance and sustainment. Naval logistics has historically provided the full range of logistics support to naval forces. Additionally, naval logistics forces provide sealift for the projection and sustainment of naval and non-naval forces.

Scope of Logistics

Within the Navy and Marine Corps and throughout the Department of Defense, there continues to be pressure to reduce force levels and minimize system costs by rationalizing force constitution, projection, and sustainment around the world. From international and inter-Service acquisition programs to joint, multinational and interagency operations, cooperative activities have broadened both the resource base and the customer base for the naval logistician.

Whether for peacetime operations, war, or military operations other than war, logistics operations are conducted in support of forces, and are subject to the risks and uncertainties common to military missions. More broadly, logistics encompasses all of the processes, procedures, systems, and activities utilized to acquire, provide, maintain, and dispose of end products—equipment, supplies, facilities, services, and trained manpower—for military forces.

More than most components of military operations, logistics can be expressed mathematically. The quantification of requirements and capabilities demanded by the warfighters allow the logisticians to perform precise calculations and useful predictions. Projecting requirements for food or fuel in any operation confidently helps us project the outcome of maneuver or engagement. This predictive capability provides the baseline from which logisticians act in response to changing customers, customer locations, and support requirements.

Creative crisis response is another part of effective logistics; in spite of its scientific basis, logistics is also an art. Increased operating tempo and attrition of logistics capability through natural events, accidents, or enemy action combine to create shortfalls in support. These events reduce the reliability of previous projections, forcing the logistician to constantly monitor

and adjust operations. Prediction, anticipation, innovation, and improvisation must be skillfully exercised as operations unfold. Logisticians must apply judgment and perception to the available information to ensure effective decision-making.

Levels of Logistics Support

Logistics support is provided at the strategic, operational, and tactical levels, and involves interrelated and often overlapping functions and capabilities.

Strategic Logistics encompasses the ability to deploy and sustain forces executing the national military strategy whenever and wherever. It involves determination of requirements, personnel and materiel acquisition, and management of strategic airlift and sealift for the optimum levels of readiness at best value to the Navy. It also includes the role of prepositioned equipment and materiel—both afloat and ashore—and our national ability to maintain the required support levels for the duration of operations. A particular concern at the strategic level is that our industrial bases maintain the capability, capacity, and technology to support timely production of modern weapon systems, support equipment, health services, munitions, stores, and command and control system components to meet wartime requirements. The greater the scope or duration of anticipated military operations, the greater the impact of continuing effective strategic logistics operations.

Operational Logistics involves coordinating and providing theater logistics resources to operating forces. It includes support activities to sustain campaigns and major operations within a theater and is the level at which joint logistics responsibilities and arrangements are coordinated. Operational logistics encompasses theater support sites and activities, ashore or afloat, and the theater transportation required to move personnel and materiel to and from supported forces. It also entails management and protection of those assets. It is the bridge that translates strategic logistics capability into tactical logistics support. The unified combatant commanders and the supporting service component commanders are the main benefactors of this level of logistics.

Tactical Logistics focuses on support within and among combat forces. Navy tactical logistics encompasses the logistics support of forces within a

battle group or amphibious readiness group and within Navy elements ashore, from both afloat platforms—including Combat Logistics Force (CLF) ships—and shore-based logistics support facilities. Tactical logistics support activities include maintenance, battle-damage repair, engineering, fueling, arming, moving, sustaining, material transshipment, personnel, and health service. Marine Corps tactical logistics, including combat service support (CSS), is provided by task-organized combat service support elements that complement the organic capabilities of the combat elements.

The Functional Areas of Logistics

Logistics activities at each level of support require a broad range of skills, knowledge, and capabilities. These form six major functional areas allowing us to understand, organize, and execute logistics. They are supply, maintenance, transportation, engineering, health services, and other logistics services. Applied in appropriate combination, they provide forces with total logistics support. These functional areas are consistent throughout the Armed Services, and provide a common fabric of logistics organization that facilitates joint operations. Below is a brief synopsis of these respective functional areas of logistics.

- ◆ **Supply** provides materiel and services for our forces. The supply function includes design, procurement, contracting, receipt, safe storage, inventory control, issuance, retrograde, and disposal of end items including repairables and consumables. The defense supply system, which includes the Navy and Marine Corps supply systems, equips and sustains our military forces during all phases of preparation and employment. The defense supply system manages millions of items, which are grouped into 10 classes of supply for management purposes. The classes of supply are listed in Figure 1-1. Additional supply support is derived from sources such as other defense and federal agencies, Navy hardware systems commands, local contracts and purchases, common-user support from other Services or allied supply agencies, and host nation support.
- ◆ **Maintenance** entails all actions necessary to preserve, repair, and ensure continued operation and effectiveness of systems (e.g., ships and aircraft), components, and equipment. It includes the policy, organization, and activities related to the maintenance of equipment, afloat and ashore. The Marine Corps identifies eight functions of maintenance:

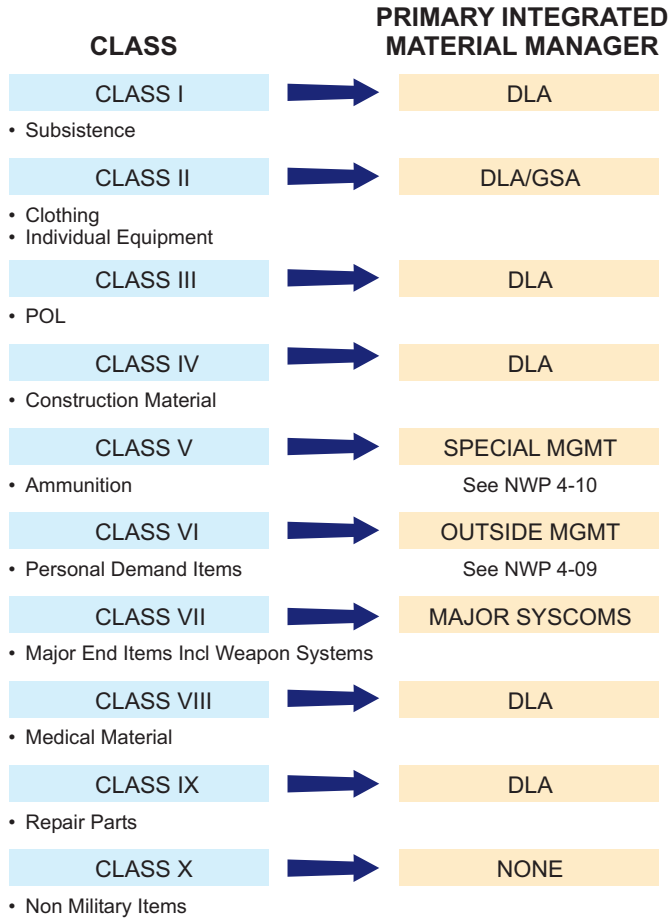


Figure 1-1. Supply Classifications

inspection and classification; servicing, adjusting, and tuning; repair; modification; rebuilding and overhaul; reclamation; recovery and evacuation. Maintenance strategies, standards of performance for preventative and corrective maintenance, technical engineering support, and battle-damage repair are important components of the maintenance function. Conservation, reutilization, and disposal are also important to the economical and environmentally sound support of forces. While maintenance is primarily involved in the sustainment process, the collection, analysis, and reporting of materiel maintenance data is critical to effective acquisition. Maintenance is conducted at three levels—organizational, intermediate, and depot.

- ◇ **Organizational maintenance** consists of unit-level inspections, cleaning, servicing, lubricating, adjusting, and minor repairs. It is the responsibility of the unit to which the equipment is assigned, and is generally performed by ship's company, naval air squadron, or Marine Corps and shore-based Navy unit personnel without outside assistance.
- ◇ **Intermediate maintenance** is normally beyond the capabilities of the using unit, but is not so extensive as to require major industrial facilities or equipment. It involves calibration, repair or replacement of damaged or unserviceable parts, components, or assemblies; emergency manufacture of unavailable parts; and technical assistance to unit maintenance personnel. It is the responsibility of maintenance activities designated to provide direct support to the units assigned the equipment. In naval logistics, tenders and larger combatant ships provide intermediate-level maintenance. Within the battle force, intermediate maintenance is provided through the Battle Force Intermediate Maintenance Activity (BFIMA). The BFIMA consists of the carrier's or amphibious assault ship's aircraft intermediate maintenance department (AIMD), the engineering departments of all the ships, and the electronics maintenance officers and skilled technicians in or embarked in the ships. Intermediate maintenance is also available through fleet or contractor facilities ashore such as ship intermediate maintenance activities (SIMAs), specialized elements of the Marine Air-Ground Task Force (MAGTF), and designated joint or combined intermediate maintenance facilities. Intermediate maintenance provides a forward source of repair support that allows the supported force to maintain or recover mission capability within the theater of operations.
- ◇ **Depot maintenance** involves major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end-items, and may support organizational or intermediate maintenance by providing technical assistance. This maintenance is provided by shipyards, ship-repair facilities, aviation depots, in-service engineering centers, naval warfare centers, weapons stations, Marine Corps multi-commodity maintenance centers, and civilian contractors.
- ◆ **Transportation** provides for the movement of units, personnel, equipment, and supplies from the point of origin to the final destination. This function includes deployment and redeployment of supported and

supporting forces, the transportation of sustainment resources, movement of forces and resources to ports of embarkation, and inter-theater and intra-theater operations. The transportation system operates at every level of logistics and provides for the movement of casualties, mail, and other critical services as well. The Marine Corps also identifies embarkation, landing support, motor transport, port and terminal operations, air delivery, material handling equipment operations, and freight or passenger transportation as functions of transportation. Further delineation of the levels of transportation include:

◇ **Strategic Transportation**, which encompasses the movement of resources to and from the theater of operations. Navy ships and their embarked forces including naval air squadrons and detachments and Marine Corps expeditionary units are initially self-deploying. Sustainment for these forces is provided either by onboard organic resources or via Combat Logistics Force (CLF) ships. In other cases, naval operating and support forces must be transported to and from theater. These situations can include Marine forces; Navy shore-based logistics forces; security, small boat, and special operating force units, and other elements of shore-based squadrons. Methods to deploy these units are via strategic common-user land, sea, and air transportation provided through the U.S. Transportation Command (USTRANSCOM), utilizing the assets of the Military Sealift Command (MSC), the Air Mobility Command (AMC), and the Military Traffic Management Command (MTMC). These commands use both military and civilian assets as available and appropriate. The Navy's MSC provides the DOD strategic heavy lift and also supports the Marine Corps Maritime Preposition Force (MPF) Program and assault follow-on echelon as well as the U.S. Army's afloat prepositioning needs.

◇ **Operational Transportation**. This transportation is the bridge between the strategic lift provider and the operating forces. CLF ships, and Navy vertical onboard delivery (VOD) helicopters and carrier onboard delivery (COD) aircraft, provide transportation to and from afloat forces. These resources may be augmented or replaced by other national military or commercial assets during combined operations. For shore-based forces, tactical transport aircraft and heavy lift can also provide transportation support helicopters.

- ◇ **Tactical Transportation.** Within the battle force, most tactical transportation is via ship's organic aircraft. Assigned helicopters shuttle personnel, sustainment, mail, and other materiel from sites and support ships, and within the battle force. Tactical transportation also allows battle group commanders to share resources and capabilities to enhance the overall readiness of the force. Ashore, sites and forces utilize organic vehicles or aircraft for tactical movements. Within the Marine Air Ground Task Force (MAGTF) the aviation combat element (ACE) provides assault support aircraft; the ground combat element provides amphibious assault vehicles (AAVs) and tactical ground transportation; and the combat service support element (CSSE) provides landing support, material handling equipment, and tactical ground support transportation.

- ◆ **Engineering** provides construction, damage repairs, combat engineering, and facilities maintenance ashore, executed by Navy, Marine Corps, and other Service engineer units; and civilian contractors. The Naval Construction Force (NCF) units, known as "Seabees," support Marine Corps engineer capabilities providing extensive technical and manpower resources in constructing advance bases, upgrading supply routes, developing aviation support facilities, and providing battle damage repair. Additionally, via the Navy Component Commander, these units provide ship to shore support, pier construction and repair, well-drilling, Fleet Hospital erection, construction of water and fuel storage and distribution and electrical power generation systems, and utilities maintenance for naval and other forces ashore. Navy civil engineers, both military and civilian, through the Naval Facilities Engineering Command (NAVFAC), also provide planning, engineering, facility contracting, real estate acquisition, and environmental support to the Navy or joint force commander (JFC). In both cases, the Navy engineer units benefit from the use of advanced base functional components (ABFC) in meeting the commander's needs. On the Marine Corps side, Marine Corps engineers are found in the Combat Engineer Battalion (CEB) of the Division, the Marine Wing Support Squadrons (MWSS) of the Marine Aircraft Wing (MAW), and the Engineer Support Battalion (ESB) of the Force Service Support Group. Marine Corps division engineers conduct combat engineering operations supporting mobility, countermobility, and survivability in forward areas. The MWSS provides the MAW basic engineering services organic to expeditionary airfield support. Finally, the ESB provides general engineering support to all elements of the MEF. This includes engineer reconnaissance, horizontal and vertical construction,

facilities maintenance, demolition and obstacle removal, and explosive ordnance disposal. Increasingly, engineer requirements are supported through joint, combined, contracted, or host nation engineering organizations.

◆ **Health Services** support the health of naval personnel and their families. This support includes medical and dental materiel, facilities, and services in both combat and non-combat situations. In contingency operations, these services are provided through organic assets including hospital corpsmen, shipboard sick bays, medical and dental battalions of the Marine Corps' FSSG, Fleet Hospitals, hospital ships (T-AH), and other fixed outpatient and inpatient facilities including other-Service, contract, or host nation facilities. The functions of HSS are health maintenance, casualty collection, casualty treatment, temporary casualty holding and evacuation, emergency and routine health care, monitoring the health, sanitation, and medical readiness of deploying forces; medical service record maintenance, and maintaining mass casualty plans. Additionally, it includes training personnel in first aid; maintaining medical intelligence files; implementing preventive medicine measures; disposing of medical waste; and ensuring combat readiness of deployed and deployable health care personnel. HSS also maintains cognizance over the supply of medical and dental materiel and blood and blood products.

◆ **Other Logistics Services** are required to provide administrative and personnel support to achieve maximum operational capability of a force. This support extends to those areas of personnel support, quality of life, and morale issues that help define the combat effectiveness of the individual. Other logistics services include billeting; disbursing; exchange services; food services; legal services; morale, welfare, and recreation (MWR); mortuary affairs; and postal services. While all are provided for naval personnel, the Marine Corps recognizes separate organic, command support services inherent in any organization (like billeting and personnel administration) and those services that come under CSS, provided by organizations resident in the CSSE. Marine Corps services provided under CSS include disbursing, postal, legal, security support, exchange, civil affairs, mortuary affairs, and food services.

◇ **Billeting** provides short or long-term housing for military and civilian personnel. Inherent in shipboard assignment, billeting support is a critical issue for shore-based and transient personnel. While Marine

Corps and certain shore-based Navy forces are self-sufficient in field billeting, expeditionary deployment of shore-based squadrons and support forces can create serious billeting deficiencies. Often, these must be met through contracting or host nation support if adequate infrastructure exists abroad. Satisfactory billeting resources are crucial for the high morale of our combat forces.

- ◇ **Disbursing** pays naval force obligations, including personnel and logistics support. Local contracting and small purchases can be critical to effective logistics support during deployments; timely and correct discharge of the resulting debts ensures continued access to support. Also, expeditionary force members may be required to subsist or draw specific services off the local economy, and adequate disbursing support under such circumstances is vital. In the absence of existing or deployed disbursing capability, emergency support may be requested from other forces in theater.
- ◇ **Exchange and Barber, Laundry and Ship's Store (BLSS) Services** provide basic goods and services to military personnel via Navy and Marine Corps Exchange activities or BLSS units while on station or deployed. Where exchange services are not available through naval support or Army Air Force Exchange Services (AAFES), local vendors may be used to supplement necessary support. Afloat ships' stores provide personal necessities as well as laundry, dry cleaning, vending, and barber facilities. For naval forces afloat and ashore, access to these services is important to morale and personnel health.
- ◇ **Food Services** furnish meals to naval personnel. Food services refer to the local storage, breakout, preparation, and serving of food, with its associated sanitation and accounting requirements. Food service is tactical support; replenishment in support of food service operation is a supply function at the strategic, operational, and tactical levels. Local purchases or local contracts for food service operations may blur this distinction. Food service capabilities are organic to ships, bases, and some expeditionary Navy shore-based units. Other shore-based Navy forces are not self-supporting, and must be subsisted off other forces or the local economy. When initial food service facilities are unavailable, naval forces rely on Meals-Ready-to-Eat (MRE) and other similar rations until such facilities can be established.

- ◇ **Legal Services** provide legal assistance in direct support of individuals, or in support of operating force planning, contracting, and operations. Increasing participation in multinational operations means a more complicated legal environment for both individuals and organizations. Prompt and effective legal advice or action can enhance the efficiency of the operating forces. Via the Naval Legal Service Command, service members are afforded basic legal support regarding personal issues. In addition, this office augments support normally provided by staff judge advocates.
- ◇ **Morale, Welfare, and Recreation (MWR)** offers sports, community, youth, and other recreational programs, as well as opportunities for travel, relaxation, education, and cultural enrichment for the service member. The application of naval force in presence and force projection roles leads to long and sometimes arduous deployments for Sailors and Marines. Important to morale and retention of a quality force, MWR activities are critical to the deployed force commander. Quality efforts to provide relief from separation, monotony, and anxiety are effective force multipliers, contributing to both the mental and physical readiness of the deployed military unit.
- ◇ **Mortuary Affairs** provide final care services for the service member's family. It includes search, recovery, identification, and disposition for the remains and personal effects of deceased members. Mortuary affairs are a Service responsibility, and the unit is responsible for initial recovery and identification. In the United States, and during peacetime overseas, the Navy and Marine Corps conduct all mortuary affairs for their members. As it entails a recovery, staging, transportation, and tracking and custody process, mortuary affairs is identified as a supply activity. During contingency operations, the Army is the responsible agent for mortuary affairs overseas, and maintains special mortuary and graves registration units for this purpose. Initial recovery and identification, and delivery to a central Army collection point, remain Service responsibilities.
- ◇ **Postal Services** provide a range of critical support services. The most recognized value of postal services has been to maintain the tenuous thread of personal contact between the deployed member and his family and friends. This is particularly true in forward areas and at sea, where electronic means may be in short supply or may be curtailed for security purposes. Mail is also the most effective way to

transmit personal parcels, providing physical demonstrations of the ties between the member and the home front. Mail also serves major support functions for the operating force. Fleet CINCs assign area mail routing coordinators and establish Fleet Mail Centers (FMC) to control the consolidation and dispatch of mail in theater. Expeditionary Mobile Mail Centers (MMCs) may be drawn from the Naval Reserve to operate in theater, and postal personnel are often attached to other expeditionary logistics units transferring mail at Advanced Logistics Support Sites (ALSSs) and Forward Logistics Sites (FLSSs). Individual units ensure effective mail distribution by providing current mail routing instruction (MRI) messages.

These six logistics functional areas combine and integrate to provide total logistics support. Planning and execution of responsive, sustainable support requires balancing the functional areas to provide the right support at the right time and place. The appropriate balance and level of support flow through various activities, channels, modes, and nodes to the end user. Regardless of the type of support or the specific means of delivery, logistics support across the full range of functional areas is provided through a series of elements.

Process Elements

The activities of the logistics process may be reduced to four general elements—acquisition, distribution, sustainment, and disposition. Every logistics action may be expressed in terms of its contribution to one or more of these elements. These four elements, summarized in Figure 1-2, make up our overall logistics process.

Acquisition. The capability of naval forces rests on the investment in operational readiness. The principal acquisition organizations are the Navy and Marine Corps systems commands including Naval Sea Systems Command (NAVSEA), Naval Air Systems Command (NAVAIR), Space and Naval Warfare Systems Command (SPAWAR), Marine Corps Systems Command (MARCORSYSCOM), Naval Supply Systems Command (NAVSUP), Marine Corps Materiel Command, the Marine Corps Logistics Bases Command, Naval Medical Logistics Command (NAVMED-LOGCOM), the Naval Facilities Engineering Command (NAVFAC), the Defense Logistics Agency (DLA), and the General Services Administration (GSA). These organizations are responsible for procuring, producing,

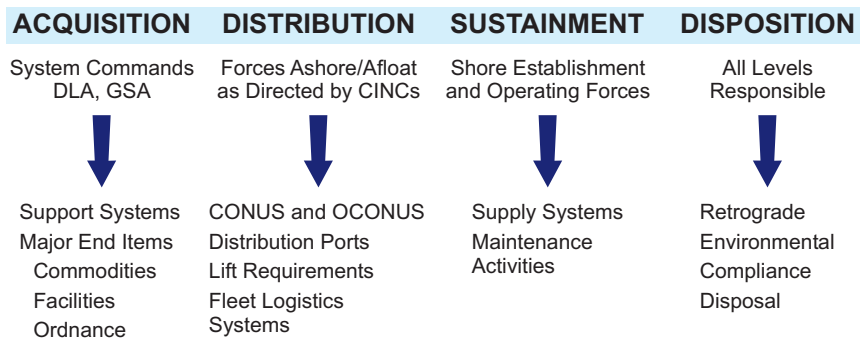


Figure 1-2. Logistics Process Elements

or constructing commodities, facilities, ordnance, and major weapon systems and end items. The Systems Commands are also responsible for life cycle management through a comprehensive systems support program known as Integrated Logistics Support (ILS). This program includes technical data, supply support, facilities, personnel, packaging, storage, handling and transportability, training and training support, maintenance planning, and design interface. This system also addresses environmental, safety, and health planning during acquisition.

Forward operations, geographically removed from much of the formal acquisition process, often demand time-sensitive reactions to support requirements. Local contracting can often support these requirements and reduce demand on the CONUS industrial base and may significantly reduce transportation requirements, while simultaneously reducing response time. NAVSUP coordinates the Navy Contingency Contracting Program through the Navy Regional Contracting Centers (NRCCs). The NRCCs provide a global network of field offices and deployable contracting capability. NRCC contracting support may be augmented or supplemented by deploying additional reserve or other contracting support to theater. Additionally, DLA Contingency Support, Contract Administration Teams, and Fuels Management Teams can deploy to support CINC contracting needs. Within the engineering realm, NAVFAC administers the Construction Capabilities (CONCAP) contract, and also provides for the Navy timely real estate acquisition authority.

Distribution. Distribution refers to the processes used to get materiel, services, and personnel to the supported forces. It includes overall management, inventory control, and integration of information. Initiatives such as Direct Vendor Delivery have broadened the definition by moving

distribution of selected items to the civilian sector. Increasingly, the logistics planner may incorporate non-military options into his mix of scarce distribution resources. Transportation decisions also depend upon what is being moved, its origin and destination, the lift assets available, and the urgency assigned. The transportation mode is based largely on the weight, size, urgency, and special handling requirements of the shipment. Airlift is normally reserved for passengers and high priority mail and cargo. Because a large proportion of naval operating forces are self-deploying, embarked on Navy ships, forward-deployed, or prepositioned, distribution considerations during initial deployment are largely the concern of shore-based forces. Responsive distribution of sustainment is a monumental concern for all naval forces. High speed operational maneuver across broad areas of ocean, flexible reassignment of afloat units between task forces or groups, and operational movement of units in and out of theater (as in escort forces and shuttle ships) demand flexible distribution. Rapid embarkation and debarkation of Marine Corps forces, aircraft, staffs, and other units also challenge the distribution system by shifting customer locations. The naval logistician must be adept at hitting constantly moving targets with critical sustainment, carefully monitoring ship and unit movements to anticipate the strategic and operational channels and modes most likely to put the support at the right place and time.

Sustainment. Sustainment is the provision of personnel, logistics, and other support required to maintain operations. This provision normally takes place at the operational level, where services and supplies processed through the distribution system actually reach the supported force. The term sustainment is also applied to specific materiel; in this usage, “sustainment” means those items planned or processed through the logistics system to fuel the sustainment element. Planners use this distinction to separate resupply from forces in deployment planning. When national leaders call on naval forces, they expect both responsiveness and staying power. Forward deployed naval forces carry with them initial sustainment stocks. Proper sustainment allows forces to remain on station as long as needed. Establishing and maintaining this reliable flow of materiel and services to operating forces is accomplished through the operation and management of logistics support activities. Sustainability depends on the effective participation of all providers across the functional areas of logistics.

Disposition. Disposition is the handling, stowage, retrograde, and disposal of materiel and resources released or returned by forces. Logistics economy, attainability, and sustainability are all dependent on the careful

husbanding of limited resources. Similarly, efficient processing and shipment of excess materiel replenishes stocks available to other theaters, and can reduce the theater “footprint” needed by removing unessential stocks.

Disposition includes cleanup of environmental and other damage incident to operations. Minimizing environmental damage requires responsible and conscientious action at all levels. Naval commanders must also act to protect the environment during all phases of an operation. Noise, air and water pollution, waste disposal, hazardous materiel storage, and accidental discharge are examples where environmental damages potentially can occur. All military forces are required to protect the environment to the extent operationally feasible through applicable DOD, local, national, and international environmental laws and regulations. The Navy, through the Supervisor of Salvage, has an oil spill-response capability including systems, equipment, materiel, and personnel. Working together with the Coast Guard, who has primary responsibility for oil-pollution response for U.S. waters including the Economic Exclusion Zone (EEZ), the Navy is committed to support cleanup actions in response to major oil and hazardous substance spills, accidental releases, and environmental terrorism.

Principles of Logistics

Naval logistics—provided at the strategic, operational, and tactical levels; organized within the six major functional areas; and accomplished through application of the logistics process—is guided by a set of overarching principles. Each plan, action, organization, report, procedure, and piece of equipment may be defined and measured in terms of these principles. Each logistics decision is guided by the application of these principles. They are applicable to all military logistics, and provide the common foundation of joint and naval logistics doctrine. Both the operational commander, who needs to know the effective limits of the available logistics support, and the logistics planner, who has to ensure that all the essential elements of the logistics system are incorporated, must understand these principles. These principles of logistics include responsiveness, simplicity, flexibility, economy, attainability, sustainability, and survivability. See Figure 1-3.

Responsiveness. *Providing the right support at the right time and at the right place.* This is the most important principle of logistics, because it addresses the effectiveness of the logistics effort, and in war an ineffective

effort leads to defeat. Ensuring that adequate logistics resources are responsive to operational needs should be the focus of logistics planning. Such planning requires clear guidance from the commander to his planners. It also requires clear communication between operational commanders and those who are responsible for providing logistics support. The operational commander's concept of operations must be thoroughly familiar to the supporting elements to ensure responsive, integrated support. Responsiveness is a product of logistics discipline, and commanders and logisticians who consistently overestimate their requirements—in quantity or priority—risk slowing the system's ability to respond.

Simplicity. *Avoiding unnecessary complexity in preparing, planning, and conducting logistics operations.* Providing logistics support is not simple, but plans that rely on basic systems and standardized procedures usually have the best chance for success. The operational commander can simplify the logistics task by maintaining cognizance of the available logistics capabilities, communicating clear priorities, and establishing support requirements based on current and accurate data.

Flexibility. *Adapting logistics support to changing conditions.* The dynamics of military operations are such that change is both inevitable and rapid. Logistics must be flexible enough to support changing missions; evolving concepts of operations; and shifting tactical, operational, and strategic conditions. A thorough understanding of the commander's intent enables logistics planners to support the fluid requirements of naval operations. In striving for flexibility, the logistics commander considers such factors as alternative planning, anticipation, reserve capabilities, and redundancy. The task organization of shore-based support tailored from advanced base functional components is an example of flexible logistics response to anticipated operational requirements.

Economy. *Effective employment of logistics support assets.* Logistics assets are allocated on the basis of availability and the commander's objectives. Effective employment requires the operational commander to decide which resources must be committed and which should be kept in reserve. Additionally, the commander may need to allocate limited resources to support conflicting requirements. The prioritization of requirements in the face of limited forces, materiel, and lift capability is a key factor in determining the logistics feasibility of a plan. Common-user materiel, facilities and services may be sourced through joint, combined, or commercial providers at significant savings in transportation, stocks, and facilities. While



Figure 1-3. The Principles of Logistics

certain redundancies may be necessary to responsiveness and survivability, the reduction in logistics “footprint” compounds savings by negating the requirement to support and protect larger logistics operations.

Attainability. *The ability to acquire the minimum essential logistics support to begin operations.* The difference between this minimum essential level of support and the commander’s desired level of support determines the level of risk inherent in the operation from a logistics viewpoint. The accurate determination of the minimum requirements, and the time it will take to reach that level given the available resources, allows the commander to determine the earliest possible date for the commencement of operations. The principle of attainability allows the commander to pursue a higher level of logistics confidence, but an operation undertaken without meeting the minimum needs determined under this principle is, by definition, destined to fail.

Sustainability. *Ensuring adequate logistics support for the duration of the operation.* Sustaining forces in an operation of undetermined duration and uncertain intensity is a tremendous challenge. Forces may operate with a diminished level of support for some time, but every means must be taken to maintain minimum essential support at all times. Sustainability derives from effective planning; accurate projections of requirements; careful application of the principles of economy, responsiveness, and flexibility to provide required support; and successful protection and maintenance of the

lines of communication. Additionally, sustainability is dependent on discipline within the operating forces when establishing requirements and expending limited resources.

Survivability. *Ensuring the functional effectiveness of the logistics infrastructure in spite of degradation and damage.* Logistics forces, sites, transportation modes, lines of communication, and industrial centers are all high-value targets that must be protected. Logistics ships, aircraft, vehicles, and bases may be vulnerable to direct attack by enemy forces or terrorists. Similarly, these assets and the systems that utilize them are subject to disruption by natural disaster, weather, communications failures, civil unrest, contract and labor disputes, legal challenges, and the political decisions of other nations. Survivability requires a robust and diverse logistics system capable of sustaining forces in the face of any obstacle. Dispersion of installations and materiel, maintenance of alternate modes of transportation and lines of communication, redundant logistics communication systems, adequate stock levels, reserves of equipment and personnel, phased delivery, effective use of deception operations, and alternate sources of supply can all support survivability. Force reconstitution and replacement, decontamination, reconstruction, re-equipment, repair, or relocation may restore the effectiveness of logistics systems degraded by battle damage or other events. Accordingly, the survivable logistics must include sufficient assets to support its own recovery as well as the operating forces.

The principles of logistics are always in evidence in a successful operation, but seldom have equal influence. At times the principles make conflicting demands. For instance, total responsiveness and survivability cannot be achieved with maximum economy. The operational commander, supported by his logistics planners, must weigh the relative importance of each principle to the specific operation. By carefully considering each principle in light of prevailing circumstances, the commander is guided toward an effective support plan that will be in consonance with operational requirements and the available logistics resources.

The Future of Naval Logistics

Any logistics system must maintain a current focus; today's support must be effective; today's operations must be efficient. U.S. naval logistics operations have provided a model of excellence to forces around the world.

Maintaining and improving that logistics excellence in changing political and operating environments requires an additional focus—forward.

Logistics in the early part of the twenty-first century will be characterized by familiar themes. The systems supported will become more complex. The pace of war will accelerate as more capable forces, supported by better information, maneuver to dominate the battlespace. Battlespace expansion will continue as sensor, communications, command and control, propulsion, weapons, and support systems evolve to permit more dispersed forces to be brought to bear. Economic and political interdependence will bring the interests—and forces—of nations increasingly closer. Combined and joint responses to crises and contingencies of many types will bring wider arrays of forces, agencies, and organizations into the logistics customer base. Logistics systems will meet these challenges through increasingly efficient application of increasingly scarce resources. Logisticians must also leverage technologies to help elevate the effectiveness and the maneuver potential of the operational commander.

Conclusion

In order for naval logistics to effectively carry out its mission of providing and sustaining operational readiness, the warfighter needs to share a common understanding of the basic nature and principles governing logistics operations. The levels, functional areas, and process elements identify the macro components that make up the total naval logistics system. The principles that govern naval logistics provide the authoritative framework that governs the formation and employment of logistics forces. Support of the operational mission and the commander's intent is inherent in the principles of responsiveness, flexibility, attainability, sustainability, and survivability. Recognition of the need for efficiency in the application of limited resources is inherent in the principles of simplicity and economy. Properly balanced, these competing interests channel the logistics effort toward success and optimum readiness at the best overall value to the Navy.



